

REMARKS

Claims 1-16 are pending in the pending application.

The Office Action objected to the abstract of disclosure (the "abstract") and required that the word "means" be deleted therefrom. Claims 1-4, 6-7 and 9-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP 10121913 to Toshiaki in view of U.S. 4,015,436 to Seki. Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Toshiaki in view of Seki as applied to claim 4 further in view of U.S. reissued patent 33408 to Kahn et al. Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over Toshiaki in view of Seki as applied to claim 7 further in view of U.S. 4,187,899 to Sterlini. Claims 1-4 and 6-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. 3,889,485 to Swearingen in view of U.S. 4,362,462 to Blotanberg. Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Swearingen in view of Blotanberg as applied to claim 4 further in view of Kahn et al.

As the Office Action does not establish a prima facie case of obviousness, the objection and rejections above are hereby traversed by the undersigned.

By this amendment, the abstract has been amended to delete the word "means" as required in the Office Action. Entry of such amendment is respectfully requested. Accordingly, it respectfully is requested that the objection to the abstract be withdrawn.

By this amendment, claim 8 is amended to provide for antecedent basis between and amongst claim terminology. Entry of same respectfully is requested.

The amendments above do not introduce new subject matter into the application.

The following remarks are presented regarding the rejections to the claims under 35 U.S.C. §103.

Toshiaki discloses an indirect heat exchanger disposed between compressor stage 22 and compressor stage 24 so as to remove the heat of compression between said stages. In Toshiaki, heat exchanger 27 is chilled by passage therethrough of gas from an expansion turbine 4. According to the last sentence of the abstract of Toshiaki, an induction power generator 28 is arranged on an end part of a rotary shaft of the expansion turbine 4 so as to "stably hold" rotational speed of a turbine "even when a load is changed".

Seki discloses cooling gas upstream of a blower 1 to which the gas is feed. Cooling is affected by introduction, upstream of the blower, of a volatile liquid into the gas being compressed. A valve 7 is disposed in the coolant flow pipe (the valve being provided in the injection tube 6) and its position is adjusted according to the temperature at the inlet or suction side of the blower 1 (Col. 2, lns. 30-35).

It respectfully is submitted that one skilled in the art would not seek to combine disclosure from these two references to arrive at the invention of the present independent claims 1 and 13. If one skilled in the art placed the Seki valve in the coolant line of Toshiaki, such would surely upset the constant rotary speed of the Toshiaki turbine. Moreover, there is no reason to make this combination. Toshiaki teaches no such necessity for adjusting the rotary speed of the turbine because same is maintained as "constant" to "stably hold" the rotational speed of a turbine even when the load is changed. Proceeding with the combination proposed in the Office Action would be teaching contrary to the teaching of Toshiaki.

Alternatively, if one were to place the Seki valve at the inlet to the first stage of Toshiaki, one would still not arrive at the invention of independent claims 1

and 13, because interstage cooling of Toshiaki would be left unaltered. Therefore, not only would one skilled in the art not be inclined to combine the references as proposed in the Office Action, but even making the combination as proposed would still not arrive at the invention of independent claims 1 and 13. There would be no necessity for one of ordinary skill in the art to combine these references, as doing so would defeat the purpose and operation of each of the separate references.

The undersigned respectfully submits that it would be improper to combine Toshiaki with Seki in view of MPEP 2143, which requires that to establish obviousness there must be a suggestion or motivation either in the prior art itself or within the knowledge of one of ordinary skill in the art to combine the referenced teachings, there must be a reasonable expectation of success and the prior art references must teach all of applicants claim limitations. This principle has been upheld by the Federal Circuit which has stated that in order to support a conclusion of obviousness based on combining prior art reference teachings, the Office must show that "a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and that there would have been a reasonable expectation of success." Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 80 USPQ2d 1641 (Fed. Cir. 2006).

A statement [in an Office Action] that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art, is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). In other words, rejections on obviousness cannot be sustained by mere conclusory statements. In addition, the MPEP 2143 further states that in order to make an obvious rejection based on combining prior art reference teachings, "Office

personnel must articulate . . . a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings" (MPEP 2143.01 IV). It respectfully is submitted that such is not the case herein because the combination purported in the Office Action would cause each of the Toshiaki and Seki references cited to fail to operate in their intended manner.

Further, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 221 USPQ 1125 (Fed. Cir. 1984). As explained above, modification of each of the Toshiaki and Seki references would render each inoperable for its intended purpose and accordingly, there would be no reason for one of ordinary skill in the art to seek to modify each with elements of the other in order to arrive at the invention of independent claims 1 and 13.

Accordingly, it respectfully is submitted that independent claims 1 and 13 as presented herein are patentably distinct from the references cited, as are the claims which depend therefrom. If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. (MPEP §2143.03, In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988)). Therefore, the rejection of the claims in view of the combination of Toshiaki and Seki is respectfully requested to be withdrawn.

Regarding the proposed combination of Swearingen and Blotanberg, the following remarks are provided. The subject matter of independent claims 1 and 13 is directed toward a compressor having at least two compression stages in a series. Accordingly, a compressor is a single machine with a single drive. In contrast, the compressors 12 and 35, for example, of Swearingen are involved with different machines having different drives. See in particular Figure 3 of Swearingen.

In addition, there would be no reason for one of ordinary skill in the art to combine Swearingen with Blotanberg as proposed in the Office Action. That is, Blotanberg discloses using water as an interstage coolant. Combining the interstage coolant water of Blotanberg with the heat exchanger of Swearingen would cause the water to freeze. Water is not a cryogenic coolant, as called for in the independent claims of the present invention. As disclosed in Swearingen, the pressurized, liquefied gas stream entering the system through line 31 is initially at -260°F and it being necessary to cool the liquefied gas stream down to a temperature of -290°F (Col. 5, Ins. 19-25). Using the water of Blotanberg to cool the compressed stream of Swearingen would not be possible as the water would freeze instantaneously. Water is not a cryogenic coolant and therefore combining Blotanberg with Swearingen would cause such combination to seize-up and fail to operate. Certainly that would not be an expectation for success by one skilled in the art.

In addition, it appears from the disclosure of Swearingen that the apparatus of same is intended to be self-adjusting without the need for any Blotanberg valve (See Swearingen, Col. 6, Ins. 16-26). That is, as disclosed in Swearingen, the compressor 12 provides part of a feed to a refrigerant cycle consisting of compressor 19, compressor 20, heat exchanger pass 18c, expansion engine 23 and a shell side of the heat exchanger 18 leading back to the compressor 19. Accordingly, a person skilled in the art would have no reason to place a valve in the cooling flow 18c and moreover, there is no suggestion, motivation or guidance for one to do so according to the disclosure of Swearingen, absent hindsight being applied in the Office Action.

Similarly, there would be no reason for one of ordinary skill in the art to make the combination as proposed in the Office Action because the result such would render the prior art unsatisfactory for its intended purpose, as similarly discussed above with respect to Toshiaki and Seki.

Therefore, it respectfully is submitted that independent claims 1 and 13 are patentably distinct from the combination of Swearingen and Blotanberg, as are the claims which depend therefrom. Accordingly, the rejection of independent claims 1 and 13 in view of the combination of Swearingen and Blotanberg should be withdrawn.

Claims 2-12 and 14-16 should also be considered non-obvious in view of the references cited, whether taken alone or in the combination proposed, in view of their dependence upon independent claims 1 and 13. If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. (MPEP §2143.03, In re Fine, 5 USPQ2d 1596(Fed. Cir. 1988)).

All issues raised in the Office Action are believed to have been addressed. In view of the foregoing amendments and remarks, favorable action on the merits, including entry of all amendments and allowance of all claims pending, respectfully is requested.

Respectfully submitted,

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